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JUN 5 1934

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE•

JUNE 2, 1934

First Chimpanzee Twins

See Page 345

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SCIENCE NEWS LETTER

VOL. XXV *No. 686*

The Weekly Summary of Current Science

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DO YOU KNOW?

Baby elephants are as playful and intelligent as dogs, says a zoologist.

Fibers produced by wild cotton plants are so short that they have no economic importance.

The famous dust storm of 1901 which fell practically all over Europe had its origin in the Sahara Desert.

Almost 600 game and fur-bearing animals were recently moved unharmed from one part of Alaska to another.

Taking the scratch out of woolen underwear without use of linings is reported achieved by British research workers.

The Maori people of New Zealand, recently seemed on the road to oblivion but the tide has turned and the Maoris are increasing.

One hundred fifty new varieties of gladiolus will be exhibited at Cornell University when the Empire State gladiolus society meets there in August.

Neon gas, which makes the red glow in many electric signs, has recently been detected for the first time in stars.

There are more than 12,000 mountain sheep or bighorn ranging in the national forests of the United States.

The shell of a hen's egg holds about two fluid ounces, but a prehistoric bird, the Aepyornis, laid eggs with capacity of 258 ounces, or over two gallons.

A sycamore tree which once stood in Daviess County, Indiana, was described in the Botanical Gazette of 1880 as measuring 48 feet around its giant trunk.

Plans to plant buckeye trees in a California reforestation project were changed when bee keepers protested that buckeye flowers would poison the bees.

Over half the milk produced in the United States is not marketed as whole milk or cream for direct consumption, but is used in manufactured dairy products.

WITH THE SCIENCES THIS WEEK

ARCHAEOLOGY

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ASTRONOMY

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Will voyagers in the stratosphere be struck by meteors? p. 349. *Meteors—Charles P. Olivier—Williams & Wilkins*, 1926, $6.

BOTANY

What flower has names meaning "eagle" and "dove"? p. 349. *Field Book of American Wild Flowers—F. Schuyler Mathews—Putnam's*, 1927, $3.50.

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ENGINEERING

Where will the longest suspension bridge in the world soon be located? p. 340.

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What can you guess about the radio announcer's personality? p. 345.

SEISMOLOGY-BOTANY

How did trees suffer from the California earthquake? p. 347.

ZOOLOGY

Do monkeys fail to get their wisdom teeth? p. 342.

On what does the Aard-Vark live when in captivity? p. 341. *The New Natural History—J. Arthur Thomson—Putnam's*, 1926, 3 *vol.*, $18.

What did the pig's ancestor look like? p. 349.

Where were the first chimpanzee twins born? p. 345.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the references for further reading. Books cited can be supplied at Book Department, Science News Letter, at publishers' prices, postpaid in the United States.

AVIATION

Higher Speeds for Airplanes And Greater Safety Foreseen

New Shape for Seaplane Floats, Rearrangement of Wings And Fuselage, Air Cooling Among New Developments

STILL greater airplane speeds and added safety and economy for private, transport and military planes are foreseen as the result of research conducted during the past year at Langley Field, Va., by the National Advisory Committee for Aeronautics.

In the past four years, as a direct result of NACA research applied by manufacturers, airplanes have had their speeds boosted by 75 miles per hour with no increased power required. Now airplane designers and manufacturers making their annual visit to the NACA laboratories here learned of new researches that seem likely to give another spurt to improved airplane design.

Some of the possibilities are:

New methods of lateral control, replacing ailerons, which have been standard for 25 years, will greatly accelerate the use of airplanes by private pilots. The most promising are flaps called spoilers which when raised lengthwise above the wings by the pulling of a lever will allow shorter take-offs and shorter safe landings by relatively unskilled fliers.

Through the simple device of making one seemingly insignificant part of a seaplane float pointed instead of square, flying boats carrying fifty passengers across the Atlantic are foreseen. The new float proved its worth in the NACA world's largest towing basin, at Langley Field, Va.

Autogiros are capable of flying two hundred miles per hour, wind tunnel tests show, whereas last year it was generally agreed that this "vertical windmill' type of aircraft, radically different from the airplane, would be useful only for slow speeds.

50 Miles an Hour

The speed of airplanes, already increased 75 miles an hour by NACA research upon better engine location and reduced air resistance of engines, will soon be increased another 50 miles per hour. This is promised by refined design of the way wings and fuselage are arranged. This means that transports cruising at 250 instead of 200 miles per hour will be possible in the next few years.

Suction Increases Lift

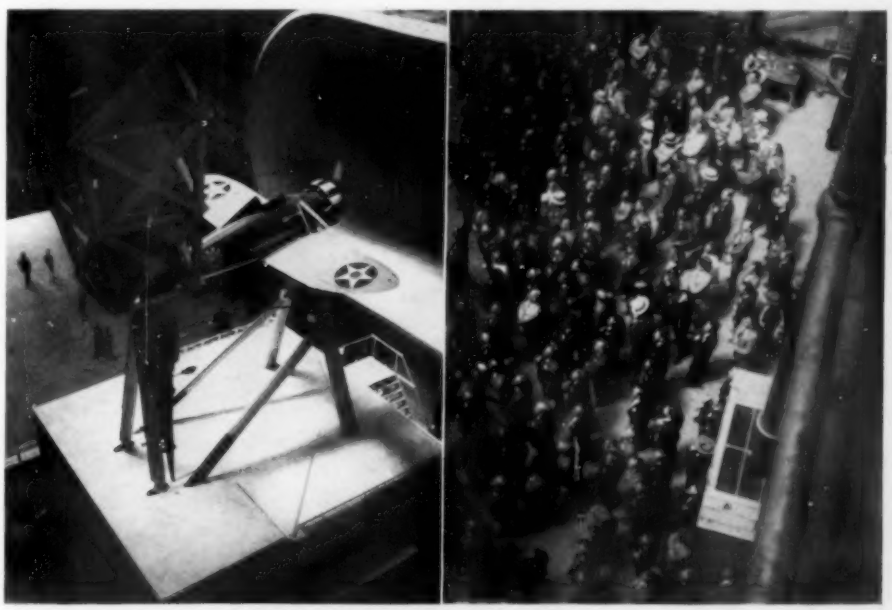
Air sucked in at the tops of airplane wings through slots will probably be used to increase the lifting power of the wings at low speeds without increasing air resistance. The effectiveness of putting suction fans into the wings was demonstrated by NACA engineers, who flowed streams of smoke around a model. Use of a few per cent. of the power of the engine in this way will allow the control of the thin "boundary layer" of air over the top surface of the airplane's wing, and increase the lifting power 150 per cent. This will greatly aid in the take-off and the landing, allowing planes to get off the ground more quickly with heavier loads, and then get down safely over high obstructions into smaller landing fields.

More power from aeronautical engines without increased size and probably reduced fuel consumption is a future development. This will come through the use of forced air cooling by blowers, injection directly to the cylinders of safety fuel that will not detonate violently or "knock," and use of two-cycle engines. It was predicted that the next big advance in aviation would be in engine improvement.

Fuel economy is foreseen as a result of an NACA spark-ignition test engine in which safety fuel is injected directly into the combustion cylinder. In ordinary engines, gasoline is mixed with air in a carburetor. This new engine, when cooled by forced air draft, runs on only about four-tenths (0.41) of a pound of fuel per horsepower hour compared with five- or six-tenths of a pound in the case of typical gasoline aviation engines now used. This approaches the fuel economy of the diesel engine (about .36 pounds per horsepower hour) and NACA engineers consider it possible that a new safety fuel injection engine can be developed that will make unnecessary the further development of diesel aviation engines.

Avoid Flutter

Violent vibration of airplane parts, called "flutter," has been explained mathematically by Dr. T. Theodorsen of the NACA staff. Sometimes flutter has wrenched airplanes to pieces in midair, destroying their wings or tail



THE SKY BROUGHT TO EARTH

The crowd of scientists and avaitors is watching a demonstration of the giant wind tunnel at the Langley Field laboratory of the National Advisory Committee for Aeronautics. A full-size Army airpane is being tested, the winds of heaven being simulated by an enormous draft of air from the mouth of the tunnel, which is 30 feet high by 60 feet long. The impressive apparatus at the left is a pistol tube for measuring pressures and determining the air speeds.

surfaces. Now designers using Dr. Theodorsen's formulae can be sure that flutter will not occur in any airplane part that they intend to build.

The National Advisory Committee for Aeronautics is an independent agency of the federal government charged with undertaking research for the aid of all aeronautical activities, military and commercial. Present at the recent meeting were Orville Wright and Col. Charles A. Lindbergh, who are among the members of the committee. Dr. Joseph S. Ames, president of the Johns Hopkins University, is chairman, and Dr. G. W. Lewis is director of research.

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ENGINEERING

Five Great Bridges Building; Funds From RFC and PWA

FIVE new bridges of major importance will span the waters of American rivers and bays to a total length of over 17 miles, shortening highway distances between important cities, and eliminating in each locality waste of time involved in ferry crossings.

RFC and PWA money to the extent of $130,000,000 is being used in financing projects now under construction or on which work will be started in the near future.

San Francisco Bay alone is getting some $117,000,000 worth of engineering attention. The huge Golden Gate span will bring to California by a margin of 700 feet the coveted distinction, now held by the George Washington Bridge over the Hudson River, of being the longest suspension bridge in the world. The seven-mile-long San Francisco-Oakland Bridge also will be the largest of its type.

A $13,000,000 cantilever-type bridge is being flung across the Mississippi river at New Orleans. Although less spectacular than the others from the standpoint of size, it presents many engineering difficulties because of its location in a region of sudden, heavy floods and oozy river bottom which make it difficult to get a foothold for the massive piers which have to support its great weight.

Another cantilever is contemplated which will carry a highway four miles over the swift tides in the Columbia river between Washington and Oregon at Astoria. The PWA is at present considering a loan of over $6,000,000 necessary for its construction.

Bridging Narragansett Bay to give Newport, R. I., easier access to New York City has for a long time been contemplated by engineers. The War Department has recently approved a plan which will in part fulfill this scheme and assistance is hoped for soon from the PWA.

The $30,000,000 bridge across the entrance of the harbor of Sidney, Australia, was for a brief interval the greatest feat of its time.

The Golden Gate project as it was at first contemplated called for a steel arch structure of the same type, but according to the Engineering Office of the War Department, these first plans were rejected, one of the reasons being the problem of its destruction in wartime.

It was feared that a steel arch because of its greater bulk might bottle up the entrance to San Francisco Bay if enemy shell-fire broke away the supports. The present cable suspension would be harder to destroy and in the event that it did crash would settle along the bottom, leaving water enough for even the largest ships to pass over.

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ARCHAEOLOGY

Jade Pendant Clue to Child Sacrifice Long Ago

A BEAUTIFUL carved head of jade found at the neck of a little child buried in San Jose, in British Honduras, is regarded by archaeologists as evidence of child sacrifice among the Mayas many centuries ago.

The jade head, a treasure so rare that not even Mayan chiefs of San Jose were adorned with anything of the sort, is a clue that the child was no ordinary little Indian. The burial was found by J. Eric Thompson, archaeologist of the Field Museum of Natural History, who has just returned from British Honduras. He conducted a joint expedition with the Carnegie Institution of Washington.

The child decked in a rare ceremonial jewel is not the only sign found by the expedition that the Mayas sacrificed children to the gods. A large number of child burials indicate to the archaeologists that the Mayas, like the Aztecs and some of the Indians of the Andes, offered children to the gods hoping to receive the favor of abundant rain.

The expedition found new and definite proof that the Old Empire of the Mayan Indians, in and around the region of San Jose, was not abandoned in a great mysterious wave of migration northward to Yucatan, as some archaeologists have thought. This supposed wholesale desertion of the great cities, 1100 years ago, is refuted by the discovery that San Jose was occupied continuously from the time of Christ or earlier down to about the fifteenth century.

Mr. Thompson has found traces of five periods of occupation at San Jose. Copper, the first ever found in place where the Mayas left it in the Old Empire country, is one discovery of importance. This metal belongs to the last period of San Jose's history, just before the discovery of America. A bit of cloth smaller than a dime is another valued bit of evidence, for the damp climate of the region does not ordinarily preserve cloth.

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ASTRONOMY

Supposed Tenth Satellite Of Jupiter Only Asteroid

JUPITER'S supposed tenth moon has turned out to be only an asteroid or minor planet, one of hundreds of such small objects that circle in the heavens between the orbits of Mars and Jupiter.

The Harvard College Observatory, American clearing house for astronomical information, has received a telegram from the first observer of the deceptive pinpoint of light, Dr. H. M. Jeffers, of Lick Observatory, Calif., stating that further observations, as well as an orbit calculated by himself and his associate, A. B. Wyse, make it practically certain that the object is an asteroid.

The addition of a possible tenth member to Jupiter's large family of moons was announced after scanning of photographs made on May 9 showed a minute fleck of light near the eighth satellite and having the same apparent motion. At the same time, however, the cautionary statement was made that the tiny celestial stranger might turn out to be an asteroid, as has proved to be the case.

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ZOOLOGY

Rare South African Mammal Comes to Washington Zoo

Aard-Vark, Only One of Kind Now Living in U. S., Had American Relatives 50 Million Years Ago

WAFFLES, the Aard-Vark, has been received in Washington to live in the National Zoological Park. Director "Bill" Mann is as proud of his new charge as a father of a brand-new son, for Waffles is the only Aard-Vark now living in America, and is the third of his kind ever to have been brought to an American zoological park. The other two, one in New York and one in Philadelphia, are no longer living.

Waffles gets his name, Dr. Mann explains, because of his "waffly" nose—Dr. Mann is a devoted reader and quoter of A. A. Milne. That nose is in more than one sense Waffles' leading feature, and goes far to explain the grotesque rest of Waffle himself. Its rubbery, nervous, incessantly active tip, with a comic little tangled moustache sticking out of its end, is constantly inquisitive about everything: the edges of his cage, a keeper's proffered hand, the redolence of the polish on a visitor's shoes, the strong symphony of scents from all the other cages in the house where he lives. A truly remarkable, intensely "waffly" nose

For Eating Insects

Waffles' "schnozzle," though astonishing rather than beautiful, is nevertheless his fortune. For the Aard-Vark is an ant-eater, and that long snout, with its nervous nose atip and a flickering sticky tongue working from underneath, plays havoc with the swarming populations of the towering termite heaps of his native veldt, after the formidable claws at the ends of his short, thick, powerful legs have breached the walls. The Aard-Vark is also a great destroyer of locusts, which are even more of a plague in his native South Africa than their cousins, the grasshoppers, are in our own West. Real ants, as distinguished from termites, do not form so large a part of his natural diet, but he eats them and practically all other kinds of insects he can find.

In captivity, Waffles' diet consists in part of milk and eggs—orthodox waffle ingredients. His third staple is Hamburg steak. Since Aard-Varks are poorly equipped with teeth, having only molars or "grinders" but no biting front teeth, Waffles must be supplied with prechewed food, to simulate as nearly as possible the small unit sizes of his natural provender. Dr. Mann states that the two former Aard-Varks in this country were also given oatmeal and hominy, as roughage.

Not Clever

Waffles is not a particularly clever animal, but is quite inoffensive and docile, apparently likes to have his head scratched, and resists handling only as a pig might: by planting himself solidly and letting you do all the pushing. Having no front teeth, he could not bite even if he wanted to, which he apparently doesn't.

Dr. Mann acquired Waffles from a prominent German zoological dealer in Hannover. He arrived sleek and fat and unruffled; evidently they understand the care and feeding of Aard-Varks in Hannover.

Aard-Varks were discovered by some of the earliest modern adventurers around Cape Horn; there is a description and picture of one in a famous old natural history book, the "Ortus Sanitatis," published the year before Columbus discovered America. There it was called "suillus," which is Latin for "little pig."

Named by Dutch

They were given their odd modern name by the Boer-Dutch settlers. Aard-Vark is Dutch for "earth-pig"; but aside from being short-legged and thick-bodied the animal bears no resemblance to a pig. Indeed, if it were not for the enormous jackass-like ears, it might almost be taken as a model for an ultra-modern streamlined automobile. Its chunky body trails a tapering, thick-based fleshy tail. The whole creature is covered with a sparse growth of coarse, straight, bristly hair.

In its native state, the Aard-Vark lives in burrows, usually concealed under grass or brush. This makes it a constant menace to horsemen on the veldt. It can dig itself in so fast that a gang of men with spades have a hard time pursuing it into the ground.

Aard-Varks are now found only in Africa, particularly in South Africa, but they once had relatives in America. Two years ago, Dr. G. L. Jepsen of Princeton University described some fossil remains from Wyoming which showed by their teeth that they belonged to the same order of animals. There

WAFFLES THE AARD-VARK

The Aard-Vark, familiar to most only because it is the first word in the encyclopedia, now has a living representative in the United States. The National Zoological Park at Washington, D. C., has just received one of these rare South African mammals.

were even digestive remains found with the bones that indicated an insect diet preference on the part of these long-gone American Aard-Vark kin-beasts. But that was in the Early Eocene—some fifty-odd millions of years ago.

So if Waffles wants a neighborly chat with another Aard-Vark he will have to invite one of his living relatives over from South Africa.

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ZOOLOGY

Monkeys Have Tooth Troubles Just Like Human Cousins

LONG-cherished assumptions that man will eventually evolve into a toothless creature because he has so many dental troubles, while his hairy cousins in the treetops always have perfect teeth, must go into the discard. Monkeys and apes have plenty of tooth ailments.

Dr. Adolph H. Schultz of the Johns Hopkins University discussed them before a joint meeting of the American Society of Mammalogists and the American Association of Physical Anthropologists in New York. His list, compiled from the examination of many hundreds of monkey and ape skulls from all over the world, might well have come from the files of a human dental clinic.

Caries or "decayed teeth" and dental abscesses are among the commonest of the ills that monkey teeth are heir to. In the series of skulls examined by Dr. Schultz, there were more cases of caries among chimpanzees and orang-utans than among gorillas, but gorillas were as liable to abscesses as were the other great apes. Some of the most fearsome-looking abscess lesions were found around the roots of the gorillas' great fang-like canine teeth; apparently these formidable jaw-armaments are not unalloyed advantages to their owners.

Lost teeth, with the gaps in the gums healed up, were very common throughout the whole primate range, Dr. Schultz found. They were, indeed, more common among some ape species than in some human races.

Impactions Too

Dental ills do not wait for the full development of the teeth in monkeys and apes. As in afflicted man, they frequently begin with the beginnings of the teeth. Impactions, mal-occlusions, crowded jaws, the whole array of troubles that keep orthodontists busy, were all found in the Johns Hopkins scientist's series of skulls.

The failure of the third molars, or "wisdom teeth," to erupt properly, or even to erupt at all, has been one of the most frequently cited of "proofs" that human beings are on the way to toothlessness. But even in the lower monkeys there are numerous cases of exactly the same thing. Sometimes there is congenital absence of any third molars at all, sometimes the same kind of rudimentary or imperfect "wisdom tooth" development that is found in our own jaws.

On the other side of the ledger, Dr. Schultz found in certain primate skulls with exceptionally long jaws a set of fourth molars—"super-wisdom" teeth, perhaps. But, he added, fourth molars are an occasional occurrence in human beings as well, especially among the primitive Australian savages.

It would seem, then, that another rung has been knocked out of the ladder of "inevitable" evolutionary progress which so intrigued our fathers in the days of a more naive scientific faith.

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MEDICINE

Regular Job is Best Tuberculosis Insurance

THE WHITE plague, tuberculosis, is still a great plague, it appears from the deliberations of the National Tuberculosis Association at its annual meeting now being held in Cincinnati.

Tuberculosis kills every year 75,000 people, more than the number of Americans who died in action or of wounds in the World War, Jessamine S. Whitney, statistician of the association reported. Of all communicable diseases, including diptheria and infantile paralysis, tuberculosis takes the greatest toll.

The disease makes its chief inroads among young women and among men in middle life. Tuberculosis is the seventh cause of death among the general population, but among men in industry it is the second cause of death. This suggests the industrial health work needs to be intensified, according to Miss Whitney.

Yet the matter seems also to call for the attention of economists. The more highly industrialized a community, the less the tuberculosis rates, Dr. James A. Britton of Chicago said the official statistics for Chicago, St. Louis and Cincinnati showed.

"A regular job with a regular pay check is the best insurance against tuberculosis that a man has for himself and family," Dr. Britton declared.

More jobs, regular employment, apparently should be added to the points of attack on tuberculosis listed by Miss Whitney. Her list included more hospital beds for tuberculosis patients; more attention to cleanliness in streets and public places, since dried sputum is still presumably a source of infection; and greater effort to teach hygiene to special groups of the population, such as Negroes, Puerto Ricans, Indians and Mexicans' among whom tuberculosis incidence is still high.

Industry Not to Blame

Industry, as a whole, in Dr. Britton's opinion, cannot be charged with any increase in tuberculosis. The occupation itself, as in the so-called dusty trades, may be a factor in causing some cases of the disease, however.

Dr. Britton cites in defense of industry the fact that the tuberculosis death rate is decidedly and persistently decreasing in spite of the rapid industrial development of the last few years. Official statistics from large cities show that the more highly industrialized a community the less the tuberculosis rate.

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AGRICULTURE

Porous Hose Useful In Crop Irrigation

POROUS canvas hose stretched alongside a row of growing plants forms the basis of a cheap irrigation system recently described by O. E. Robey of Michigan State College. By varying the size and porosity of the hose, varying amounts of water can be applied.

Under the system water at 15 to 20 pounds pressure is pumped through metal pipe-lines, with the canvas offshoots serving up to 660 feet of row.

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ASTRONOMY

Spots Decorate Both Upper And Lower Halves of Sun

BOTH the northern and southern hemispheres of the sun are decorated by spots. A northern spot has a diameter of 19,000 miles, while one in the south measures 14,000 miles.

Dr. Seth B. Nicholson, astronomer in charge of solar observations of the Carnegie Institution's Mt. Wilson Observatory here, explained that there was a spot on the sun's face in April that was an earlier stage of the 14,000 mile diameter spot. At its maximum it was 35,000 miles in diameter including its outer portion of penumbra. A new small group of spots appeared on the sun recently, making four groups in all.

Thus far these spots have produced no change in the earth's magnetic field.

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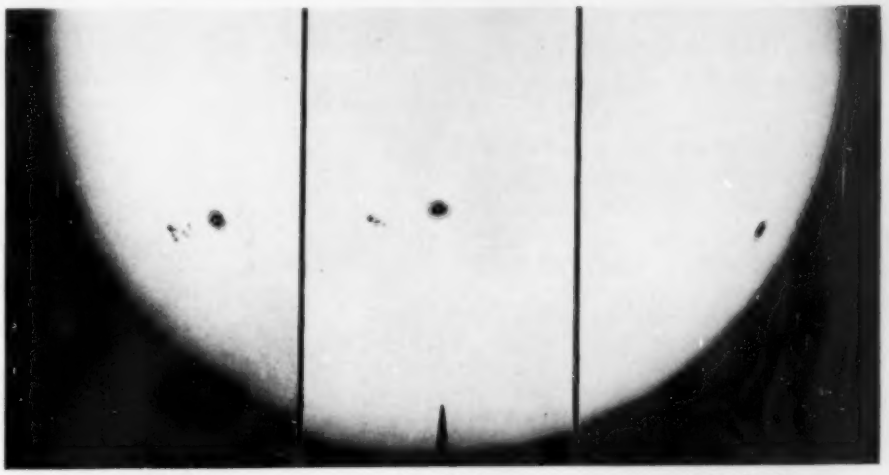


April 18 *April 21* *April 26*

LARGE SUNSPOT GROUP

These three sectors of the sun's disk show an unusually large group of sunspots as they passed across the solar face and were photographed at the Mount Wilson Observatory. The total length of the group was 106,000 miles. The largest spot in the group was 35,000 miles in diameter and had a dark center 15,000 miles across.

ASTRONOMY

Zodiacal Light Partly Due To Dust Among the Asteroids

IN THE spring, just after twilight in the west, and in the autumn just before dawn in the east, one may sometimes see a faint finger of light stretching up from the horizon and, in the northern hemisphere, inclined toward the south. This is the zodiacal light, so-called because, stretching out on either side of the sun, it lies along the zodiac —that belt of constellations that encircles the sky and forms the highway along which the sun, moon, and planets travel among the stars.

The zodiacal light diminishes in intensity toward the tip of the finger, and from the central portion—axis—toward the edges. Under very favorable conditions, a thin string of faint light can be seen to stretch all around the zodiac, and to increase perceptibly in brightness at the point opposite the sun. The latter is the counter-glow or "Gegenschein" as the Germans call it. This phenomenon is best observed in low latitudes, where the zodiac passes nearly overhead. It has been known since 1854 when it was discovered by Brorsen.

The theory generally accepted down to the present time has been that the light is due to diffuse reflection of sunlight from a huge lens-shaped cloud of dust that fills all the central part of the solar system out to somewhat beyond the earth's orbit, the density of the clouds diminishing from the sun outward. This theory has been considered fairly well established by the researches of the astronomer H. von Seelinger around 1900.

New Theory

A new theory is now proposed by Dr. Cuno Hoffmeister of the University of Berlin Observatory at Babelsberg. In 1930, he made a voyage to the South Atlantic and to the Caribbean Sea, under the auspices of the Society of German Scientists, and made many photometric measurements of the brightness, and exact measurements of the position, of the zodiacal light. He found that Seelinger's theory accounted well for intensities of the light along the axis, but not for intensities away from the axis. Little attention had in fact been paid to the latter, and exact photometric measurements were almost wholly lacking.

Last year, Dr. Hoffmeister made another voyage to the same regions, repeated and extended his measurements, which completely confirmed his former results. They are now reported in the scientific journal, *Forschungen und Fortschritte*.

Dr. Hoffmeister finds that the glow really consists of two parts, a brighter central portion toward the sun, and a fainter outer portion. This finding is supported also, he says, by measurements made at the Harvard Observatory at Arequipa, Peru, and by a few others.

The inner glow he believes is due to a dust ring inside the earth's orbit but extending slightly beyond it, the densest part coinciding approximately with the orbit of Venus.

The outer glow and the Gegenschein he believes are due to a dust ring outside the orbit of Mars. This would place it about in the region of the asteroids, those tiny planets from 2 to 500 miles in diameter, of which more than a thousand have been discovered, that revolve between Mars and Jupiter.

Dr. Hoffmeister makes the bold suggestion that the outer dust cloud may be due to the gradual disintegration of these tiny planets. This raises the interesting question whether the inner cloud may not also be due to the disintegration of small planets, most of which have already disappeared, but a few of which may yet survive and may yet be discovered.

Science News Letter, June 2, 1934

Funeral wreaths of flowers were commonly used in Egypt about 1200 B. C.

CHEMISTRY

New Acid Indicator May Be Better Than Litmus

CHEMISTRY has been presented with a new chemical which is said to have advantages over litmus for indicating the difference between acid solutions and alkaline solutions at very low concentrations.

It is 2,4-dinitrobenzene-azo-1-naphthol-3,6-disulfonic acid, a name which tells the chemist exactly what it is composed of, but the inventor has offered "nitrazine yellow" as a shorter alternative.

Nitrazine yellow is distinctly blue in a solution of alkali such as soap or ammonia. If an acid like muriatic or vinegar is added, the solution remains blue until the alkali is neutralized. Then if a little more acid is added the solution turns gray, at an extremely low acid concentration defined by chemists as pH 6.6, and beyond that point on a rising acid concentration the nitrazine yellow in the solutions turns bright yellow.

Dr. Henry Wenker, an independent chemist working in his private laboratory, discovered nitrazine yellow. He says its advantages over the well-known litmus indicator lie in the fact that it is slightly more delicate and that the color contrast is somewhat sharper.

Nitrazine yellow can also be used in the preparation of a test paper like litmus paper. This is a more convenient form for getting an accurate idea of whether a liquid is base or acid.

Science News Letter, June 2, 1934

GENETICS

Scientists Advised to Study Circus Side Shows

SCIENTISTS have at last found themselves a good alibi for taking in the circus side-show freaks.

"College teachers of eugenics courses," advises *Eugenical News*, "will find ample excuse as 'a purely scientific expedition' in accompanying their students to the side-show or Coney Island."

With just a suspicion of a twinkle in his eye, perhaps, the writer of this scientific advice argues persuasively that the student of human heredity must study the abnormal as well as the normal. Therefore, to see the abnormal at its most starkly exotic, students and teacher may now follow the crowd, as a scientific duty, to the tent where the "strange people" hold forth.

The extraordinary things they find called to their attention there are mostly hereditary—the giants, midgets, skinny and fat folk, albinos, the man with the revolving head or the extra leg, the pathetic microcephalic.

To be sure, carrying away a vivid mental picture of the pathological possibilities in heredity does not make a "scientific expedition." The eugenics student is expected to go further, and probe into the text book reasons for such abnormalities—whether diet, defective glandular mechanism, pre-natal injury or some other cause.

Additional light can be shed on the conditions that produce freaks by looking into the family history of any individuals who are willing thus to assist science. Not merely in the father and mother, but in thirty or forty of the nearest blood-kin, the eugenist hunts for the traits, and perhaps certain environmental influences, that play their role in making a human strange enough for a side-show curiosity.

The rules of heredity are nowhere more impressively revealed than in the side-show.

Science News Letter, June 2, 1934

EVOLUTION

Hippopotamus Not Descended From Pig

THE hippopotamus is probably not the grandchild of a prehistoric pig, as many zoologistists have believed. As four-toed members of the great cloven-hoofed group of animals, pigs and hippopotami have generally been considered fairly close relatives.

Examination of many hippo fossils from the late Tertiary deposits of India by Edwin H. Colbert of the American Museum of Natural History indicates that they were possibly descended, instead, from an ancient group of cloven-hoofed mammals called Anthracotheres.

Resemblances in the structure of the skull, teeth and skeleton are the main points upon which the relationship is traced. This is borne out by detailed dissections of pigs and hippopotami which show very little resemblance in their internal anatomy. The origin of the hippo has been one of the mysteries of paleontology, since the big-mouthed Behemoths appear in the fossil records very late and in essentially the same shape as we now know them. Intermediate forms, that would give evidence of what group of creatures they sprang from, have never been found.

Science News Letter, June 2, 1934

IN SCIENCE

OCEANOGRAPHY

Iceberg Crop Big But Tourist Thrills Unlikely

IT IS a big year for icebergs in the North Atlantic, but ocean travelers are not likely to get the thrill of sighting these treacherous monsters of the sea.

The U. S. Coast Guard thus sums up the situation as the iceberg season nears its peak.

The forecast for the season was that about 700 icebergs would appear off the Grand Banks of Newfoundland. The average crop of these huge chips from the glaciers is around 500.

Latest reports from Coast Guard cutters patrolling the danger zone tell of bergs sighted about 44 degrees north latitude. This is 200 miles north of the track followed by steamers plying between the United States and Europe.

Ocean currents which determine the fate of the icebergs are keeping the bergs from drifting south into traffic lanes this year. Coast Guard officials say that while experienced sea captains try to keep as far from the drifting bergs as they can, many passengers look forward to seeing an iceberg as a thrill.

Science News Letter, June 2, 1934

CERAMICS

Cobalt Gives Pottery Silver-Like Coating

DAZZLING, silver-like coatings for pottery, which will not wear through or tarnish as pure silver does, are now possible at a moderate price.

By means of a special process recently discovered of producing "sharpfire" cobalt, a brilliant and extremely hard glaze, at a moderate price, the pottery industry has done an about face from the older method of using silver.

This gleaming substance has long been known, but it has been of little use as a coating due to its prohibitive price. Now it will appear on the market in all colors. It is even possible to combine it with burnishing gold or silver which will give the new coatings all the advantages of the pure metal.

Science News Letter, June 2, 1934

NCE FIELDS

ETHNOLOGY

Mexican Indians Used Gourds for Duck-Hunting

BIG calabash gourds were an essential part of a duck-hunter's costume among the Indians of Northern Mexico, at the time of the Spanish Conquest. When a band of hunters harbored designs on a flock of ducks feeding in the shallow water, they first set a lot of calabashes afloat for several days until the birds became accustomed to them.

The hunter then donned a similar calabash hollowed out to admit his head and perforated so that he could see. With just the calabash above the water, the Indian moved among the ducks, and seizing them by the legs, drew them under, wrung their necks, and fastened them to his belt.

Dr. Ralph L. Beals, ethnologist of the University of California, found this method described in early Spanish chronicles of Mexico.

Science News Letter, June 2, 1934

PSYCHOLOGY

Fear of Capital Punishment No Deterrent to Murderers

FEAR of capital punishment apparently does not stop a murderer, Dr. John A. Larson of the Institute for Juvenile Research, Chicago, reported to the American Psychiatric Association.

Dr. Larson studied the personality make-up of 800 murderers in Illinois prisons for crimes ranging from assault with intent to kill to actual homicide. He found capital punishment apparently no deterrent to the group.

Almost half of the murderers studied were found to be emotionally unstable. In contrast, in the general prison population emotional instability is present on the average in only 14 per cent., or a little over one-tenth of the prisoners. Dr. Larson also found a marked increase in acute mental disease and breakdown. Over half of this occurs in the group of first offender murderers and accidental offenders.

"The women negro offenders of American birth show the best promise of reclamation as they become good workers and trusties under the proper educational influence," Dr. Larson said.

Psychiatric treatment and re-education can accomplish much with the assault-murderer type of offender, he asserted.

In many cases the underlying factor which caused these prisoners to turn into murderers could be found in deteriorated neighborhoods and in alcoholism which brought about disorganization of the home.

Science News Letter, June 2, 1934

PUBLIC HEALTH

AAA Watching Health As Well As Economics

HEALTH considerations in the milk supply are not being disregarded by officials of the AAA, in working out the new marketing agreements denounced by some of the distributors.

One of the witnesses recently appearing before the House Agricultural Committee relative to these matters, Mrs. W. E. Frisbley, asked for the resumption of the old marketing agreements containing retail price fixing provisions. As president of the Chicago Housewives League and representing consumer groups in Chicago, Mrs. Frisbley said the old type agreements were necessary because they insured health safeguards.

Statistics showed, she said, that total milk consumption decreases when store sale of milk increases.

As a matter of fact, the "chiseler" who buys milk cheaply from dairies where standards of cleanliness are not enforced, is just the man whom the AAA wishes to catch. Under the present type of license and marketing agreement, it is believed quite practicable to "crack down" on him because jobbers who are obeying the agreement will report his activities, particularly his failure to pay the producer the established wholesale price.

Also the Department of Agriculture is proceeding constantly in an effort to clean up herds in cooperation with state governments. The aim is to eliminate all tuberculous cows and those suffering from Bangs' disease or contagious abortion. A considerable sum of authorized money may shortly be made available for this work, in connection with the establishment of beef cattle as a basic commodity.

Science News Letter, June 2, 1934

ZOOLOGY

First Chimpanzee Twins Pictured With Mother

See Front Cover

THE first chimpanzee twins born in captivity, and the first occurrence of such a double birth among the great apes, for which there is any scientific record, was reported recently by Dr. Robert M. Yerkes, of the Laboratories of Comparative Psychobiology, Yale University. (*See SNL, May 26, p. 327*).

A camera was trained on the rare infants by M. I. Tomilin, of Dr. Yerkes' staff, obtaining the very excellent portrait shown on the front cover of this week's SCIENCE NEWS LETTER.

The twins were born at the Anthropoid Experiment Station in Orange Park, Florida. When photographed they were exactly four months and one day old.

Science News Letter, June 2, 1934

PSYCHOLOGY

Voices Show Personality, Radio Test Indicates

WHEN you speak over the phone or radio, the voice transmitted electrically "gives away" more of your personality than you may think.

Harvard University psychologists, who feel that the problem of judging personality by the radio voice has received very little attention, have made ten experiments at their psychological laboratory and at a Boston radio station.

The voice does convey correct information as to personality, is the general conclusion reached by Dr. G. W. Allport and Dr. Hadley Cantril from the experiments. Inner qualities can be more correctly judged from voices than physical appearance or other outer signs, the psychologists report in the *Journal of Social Psychology*.

No particular trait has been found to show up consistently in normal speaking voices, so that listeners can regularly identify it. Nor is it true that certain types of individuals are always to be recognized by their voices, and other types not at all.

But in matching to voices various personality features, such as age, vocation, emotional type, interests, force of character, it was found that the judgments were successful often by large margins over chance.

Science News Letter, June 2, 1934

ASTRONOMY

Mercury Makes Brief Visit

Tiny Planet, Rarely Seen, Will Be Low in the West Just After Sunset For a Few Days Near the Middle of the Month

By JAMES STOKLEY

TWO planets may be seen during the first summer month of this year, in addition to the stars that decorate the June evening skies. One is brilliant Jupiter, which has been with us for several months and which can be seen high in the south just after sunset. The other is a less commonly observed object, tiny Mercury, which revolves around the sun in an orbit so small that it can never get to any part of the sky far from the sun.

During the night of June 13 Mercury will be farthest east of the sun, and will remain above the western horizon for about an hour and three quarters after sunset; so on this evening, and one or two others before and after, you may be able to get a glimpse of it in the western twilight. On June 13 it will be close to the crescent moon, just about two days past new, and this may help you locate it.

Saturn, the famous ringed planet, rises about midnight at the beginning of the month and two hours earlier at the end, while Venus appears in the east about two hours before sunrise. Of these planets, Jupiter is the only one shown on the accompanying maps, which depict the heavens as seen about 10:00 p m.. eastern standard time (11:00 p. m. daylight saving time) on June 1, 9:00 p. m. (10:00 p. m.) on June 15, and 8:00 p. m. (9:00 p. m.) on June 30.

Vega, in the constellation of Lyra, the lyre, is the most brilliant star to be seen these June evenings. It shines high in the eastern sky. Below it and to the north is Cygnus, the swan, sometimes called the northern cross. The cross is lying on its side. At the northern end of the constellation is the star Deneb which marks the tail of the swan. Albireo, considerably fainter, indicates the bird's head and is just below Vega. Still lower and directly east is Altair, in the constellation of Aquila, the the eagle. Jupiter at present is in the constellation of Virgo, and just below it is the star Spica which is a part of that group. Still higher and even brighter is the brilliant Arcturus. In the southeast a brilliant reddish star can be seen. This is Antares, the heart of Scorpius, the scorpion.

To the right of Virgo in the western sky shines Leo, the lion, with two easily identified groups of stars. Farther west is the "Sickle" with the first magnitude Regulus at the end of the handle. The blade curves northward and then down to the west point of the horizon. To the south of the sickle is a well defined right triangle of stars of which the brightest star, which is also nearest to Virgo, marks the tail of the lion and is named Denebola. Castor and Pollux, the twins, are low in the northwest, so low in fact that it may be rather hard to find them. Pollux, farther west, is the more brilliant. Still lower and farther north is Capella, in Auriga, the charioteer.

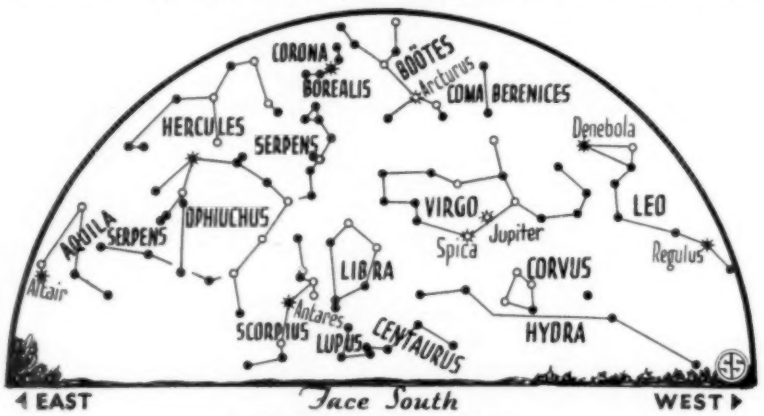
The familiar Great Dipper forming part of Ursa Major, the greater bear, shines high in the northern sky, the handle of the dipper curving around towards the south. The two pointers at the side of the bowl opposite the handle are almost horizontal. A line drawn from them to the right brings you to Polaris, the pole star. Low in the north, under the pole star, is the W-shaped constellation of Cassiopeia. These last mentioned constellations are called "circumpolar" because they are closer to the pole, about which the entire sky seems to turn, than to the horizon, so they can never set below it. Ursa Major and Cassiopeia can be seen in the northern sky any clear night during the year, but sometimes one is above and sometimes the other.

Among the supremely important dates in the history of human thought is 1543. That was the year in which the great work of the Polish astronomer, Nicolaus Copernicus, "De Revolutionibus," was first published. In it the author called attention anew to the old Greek theory that the earth was a planet revolving around the sun along with a number of similar bodies. Until then the generally accepted belief was that the earth was the center of the universe.

If you watch the motion of the bright planet Jupiter in these June evening skies, you can see one effect of this motion and see how much easier it is to explain than if we still thought that the earth was fixed. Jupiter, of course, is a planet, and moves among the stars. During the last few months it has been travelling westward and passed the bright star Spica which shines below it. But during the first week or so of June this motion will become less and less and on the 11th the planet will appear to be stationary. But after that date it will start its motion once more, this time towards the east.

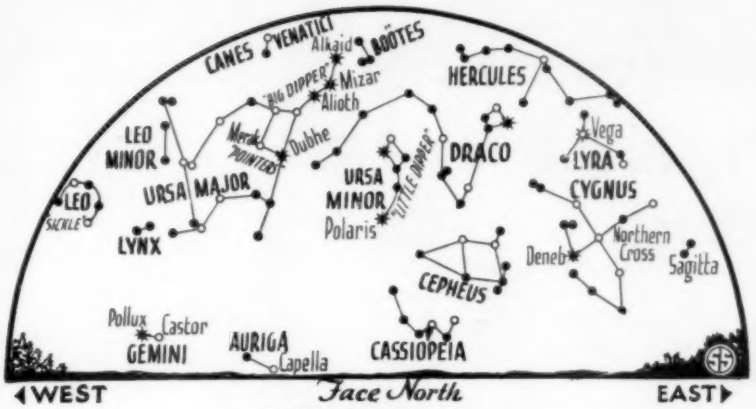
This behavior of Jupiter is not at all strange, but happens several times a

✡ ✷ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



JUPITER IN THE SOUTH

Jupiter is still a brilliant sight in the southern sky. A more rare visitor, Mercury, is not shown on this map because it is visible for only a short time after sunset low in the west.



BRIGHTEST STAR

High in the eastern sky shines Vega, brightest star to be seen in this month of honeymoons.

year. Before the days of Copernicus it was noticed, and an elaborate mechanism had to be invented to explain it. The astronomers of those early days had noticed that all the planets seem to have a general progression eastwards among the stars, along with the sun, and they explained this by saying that each planet, as well as the sun and the moon, was attached to a vast crystal sphere, which revolved around the earth in its proper period. Each was supposed to give out a musical note as it revolved, and this caused the "music of the spheres."

Then, when the alternate backward motion of Jupiter, as well as of other planets, was noticed, they decided that the planet was not attached directly to the large crystal sphere, but to a smaller one, which, in turn, was fastened to the great one. The smaller sphere was called an epicycle. Thus the planet would be carried generally in one direction, but sometimes its motion in the epicycle would be added to that of the great sphere and it would seem to be going unusually rapidly. Again, the former motion would be in the opposite direction and the planet would move backwards. As more refined measures of the planets were made, still other irregularities were discovered and more epicycles were added, one on top of the other. Finally, as Sir Arthur Eddington once expressed it, "the music of the spheres became lost in the whir of machinery."

Such a theory seems ridiculous to us now, but it held for centuries. Even after Copernicus suggested a much simpler explanation, additional centuries were required to secure the adoption of his idea, and men were even imprisoned for believing that the earth moved.

According to our modern ideas, then, the motion of Jupiter is explained in this way. The earth is travelling eastward in its orbit around the sun, at a speed of about eighteen miles a second. Jupiter is also going eastward in its orbit, but at a speed of only about eight miles a second. When the earth and Jupiter are on the same side of the sun we go by the more slowly moving body, and it, in effect, is going backward relative to us at a speed of some ten miles a second. And a little later when we are on the opposite side of the sun, the two motions are added. As the earth begins to turn around to the opposite side of the sun, there is a brief period when the two motions just balance, and this is what happens on June 11. A very similar effect can be observed from a rapidly moving express train when it passes slower freight on the next track. Even though both are moving in the same direction, the freight train, to people on the express, seems to be going backwards.

It is also on account of the motions of the planets around the sun that Mercury, the smallest and innermost of the planets, can be so seldom seen. During June there will be the best opportunity afforded by 1934 to see this elusive little object, which Copernicus himself is said never to have viewed. Its average distance from the sun is only 35,950,000 miles, compared with 92,900,000 for the earth. It revolves around the sun at such a speed that it comes around between the sun and the earth every 116 days.

The result of this is that it swings back and forth like a pendulum, first on one side of the sun, then the other. When to the west of the sun, it comes up just before sunrise, and is a morning star; when to the east, as it is on June 14 in the early morning hours, it is visible in the west after the sun has set. The ancients noticed this but for a long time they did not realize that the planet they saw in the morning was the same as the one they saw in the evening, so they gave it two names —Mercury as an evening star and Apollo when it was seen in the morning twilight.

During June the moon is at last quarter on the 4th, new on the 11th, at first quarter on the 20th and full on the 27th. Thus moonlit evenings are on the schedule from about the 18th to the end of the month. On June 21 the moon passes Jupiter, and on that evening, as well as the evening before, the brilliant planet and the moon will be a conspicuous pair in the southern sky.

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SEISMOLOGY—BOTANY

Plant Life Not Harmed By California Earthquake

ALTHOUGH it left a wake of death and ruin among the works of man, the Long Beach earthquake of a year ago seemed to exempt vegetation from its ravages, Dr. H. G. MacMillan, plant pathologist of the U. S. Department of Agriculture, states as the result of a careful survey of the shaken area.

In the past, Dr. MacMillan says, similar tremors have been the cause of fertile areas being transformed into deserts, but in the present example intermittent observations during the past year have revealed no injury to plants primarily due to the earthquake.

There are a few trees, Dr. MacMillan continues, which appear to be dying from gas injury such as would be caused by gas escaping from a broken or cracked main. Trees also standing on a local fault were injured, but on growing crops there was no visible effect, either at the time of the quake or later.

Dr. MacMillan points out that earthquake damage to plants may be caused by changes in the water level, a rise in the temperature of the soil water, or by mechanical injury to the smaller roots and rootlets of plants in the shaken area.

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Scientists have proved that certain hairy-coated soy bean varieties escape being eaten by leafhoppers merely because the hoppers object to the rough coat.

ARCHAEOLOGY

Stone Tools May Have Been Made by First Virginians

TWO STONE tools just discovered in Virginia present a new puzzle of importance for scientists who are trying to explain the long prehistoric stream of events in America.

The Virginia tools are reported to be manufactured by the same stone craft technique as the famous "Folsom points" discovered across the country in Folsom, New Mexico, some years ago. The Folsom points have attracted wide scientific attention because they were lying closely associated with bones of extinct bison. Additional finds of similar blades in other states have suggested that America was already inhabited near the end of the Ice Age, when mammoths and extinct forms of bison, camels, wild horses, and other vanished breeds roamed the continent. The age of such mammoth hunters has been variously estimated from 10,000 to 20,000 years ago.

Discovery of the Virginia tools is announced by David I. Bushnell, Jr., collaborator of the U. S. Bureau of American Ethnology. Mr. Bushnell found one of the stone objects on the Rapidan River, the camping stream of former President Hoover. The other object was located about twenty miles from Fredericksburg.

The two Virginia specimens were not arrow points or javelin heads, like most of the Folsom points known. The contours suggest, instead, to Mr. Bushnell that these things were like our multiple kitchen tools, which may combine a can-opener, corkscrew, and knife-sharpener. The equivalent idea in prehistoric Virginia seems to have been a skinning knife, with a ripping blade or scraper at the opposite end.

Mr. Bushnell's archaeological researches in Virginia have, for some years past, been pushing the prehistory of the East back into a greater antiquity. Mr. Bushnell is not, however, ready to assign to his Virginia discoveries an age as great as that suggested for the Folsom points of the West.

It now remains to be explained how the weapon-making technique of America's oldest hunters came to Virginia, and whether these are the camp tools of Virginia's original "first families."

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ETHNOLOGY

Peoples Are Better the Farther They Migrate

NATIVE American farmers in the eastern United States are surprisingly incompetent in comparison with their immigrant neighbors when their inherited opportunities are taken into account, Dr. Ellsworth Huntington of Yale University declared at the annual meeting of the Population Association of America.

The laws of migration, he said, are of the utmost importance historically, economically, politically and socially, athough they are little understood.

"The first law, as to the selective quality of migration," he explained, "is illustrated by the way in which the long distance migrants, no matter where they were born, or where they now live, rank consistently above the non-migrants and the short distance migrants. The second law, as to the attractive power of opportunities, finds its illustration in the fact that the cultural rank of the people here considered rises in harmony with the size not only of their birthplaces, but of their places of residence. The third law, as to the correlation between the length or difficulty of the migration and the quality of the migrants, receives confirmation in the systematic way in which the long distance migrants stand above the others except perhaps in the great cities and their suburbs. According to the fourth law the farther people migrate the more those of different origin become alike.

Affects Daily Lives

"They have a direct bearing not only upon immigration policy, but upon such everyday problems as the value of real estate, the advisability of starting industries, and methods of preventing crime. Scarcely any major phase of modern life is free from complications due to the selective action of migration.

"Other things being equal, the longer, or more difficult a migration, the more closely do people from all sorts of sources resemble one another at the end. This suggests that the relatively weak elements in a population are in some ways its most characteristic portion. The farmers of China, Russia, Germany, and America differ from one another in their ways of working, living, and thinking much more than do the most highly educated and cosmopolitan members of these various nations. Men like Tolstoi, Tagore, Einstein, and Woodrow Wilson have far more in common and far more sympathy for one another than do ignorant laborers from the same countries. It seems to follow from this that if in the course of centuries new nations could be built up from the finer elements of the present nations, their differences would be much less than those which now divide one part of the world from another."

Science News Letter, June 2, 1934

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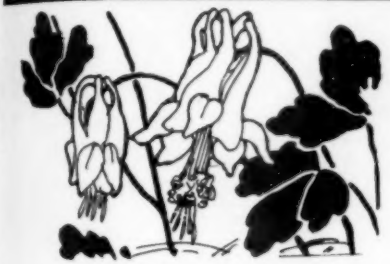
BOTANY

NATURE RAMBLINGS
by Frank Thone



Both Dove and Eagle

IN THE perennial debate that never seems to approach a conclusion, as to what should be our national flower, the columbine has always had a solid body of staunch advocates. The chance resemblance of its name to Columbia, the poetic title given to the United States in the later eighteenth century, may have something to do with it. But more probably it is simply a matter of the recognition of the beauty of the graceful plant that in a number of species ranges over a considerable part of our country.

The commonest columbine of the eastern United States is the vivid orange-colored species sometimes called the Canada columbine. Not that it is peculiar to Canada, but that in old French days a good deal of the territory beyond the Alleghenies was considered a part of Canada. The Rocky Mountain long-spurred columbine is a magnificent blue, and the Yellowstone Park area boasts a species that is appropriately a bright lemon-yellow.

The saltier-minded among our political commentators might point out a parallel between the somewhat inconsistent American temper, which alternates between truculence and pacifism and the two mutually contradictory names of the columbine. For the Latin name of the plant is *Aquilegia,* which comes from the word meaning an eagle. The name was suggested by the claw-like cluster of the flower-spurs. And the common name, columbine, is also taken from the Latin, but refers to doves!

But to such scoffers it might be countered that the eagle's claws are tipped with beads of honey, and that this dove-named plant is very hardy and able to take care of itself, in all wind and weather. It even thrives under dry conditions, though it prefers moisture.

Science News Letter, June 2, 1934

AVIATION-ASTRONOMY

Meteors no Menace to Travel In the Upper Atmosphere

Although Often Bright and Seemingly Close, Fireballs Have Small Chance of Hitting Plane Even Ten Miles High

METEORS that flash in the upper air will be no menace to air passengers when airlines span oceans and continents in record time by using the stratosphere for their airways.

So bright and menacing, some "fireballs" have appeared to commercial airline pilots in recent months that they felt sure their crafts were about to be hit. Some of them even veered their planes because of a meteor that seemed to be coming at them.

Dr. C. C. Wylie, University of Iowa astronomer, has looked into the matter of the danger to aviation from those fragments from the heavens that bombard the earth, usually to be consumed in the heat that they create by plunging through the upper atmosphere. He reports that he has never as yet seen a "shooting star" which came low enough to damage even an airplane flying in the stratosphere, although one night he heard the explosion of one which may possibly have come as close as ten miles.

"We may," he states, "compare the danger from meteors in stratosphere flying with the danger from lightning in automobile driving. The chance of a plane being struck at an altitude of ten miles or thereabouts is almost negligible."

The airways of the future as contemplated by Dr. Wylie will almost certainly lie in the upper regions, where the thinness of the air will make great speed possible in lines stretching not only from country to country but across the Poles. Fear has been expressed in various quarters that meteors would constitute a grave menace, but Dr. Wylie does not consider celestial bombardment even a minor danger.

Dr. Wylie considers the danger of being suddenly startled by the presence of a dazzling light in the sky greater to automobilists than to pilots.

When a spectacular meteor falls it may light up several states brighter than the full moon does. Dr. Wylie cites instances where drivers have nearly wrecked their cars when a "fireball" unexpectedly shot across the heavens. One driver was going around a dangerous curve when a meteor fell. He looked around to see what had happened and narrowly missed crashing into a ditch. Others seeing a brilliant light thought their cars might be on fire.

But Dr. Wylie concludes that authentic reports of damages to either motorists or airplane pilots which can be attributed to a meteor will probably be rare.

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ZOOLOGY

Ancestors of Pigs Found in India

THE GREAT granddaddy of the pigs lived in Europe and Asia 35,000,000 years ago. He did not look so very different from his modern descendants in the barnyard, for pigs are conservative in everything but their skulls and teeth, Edwin H. Colbert of the American Museum of Natural History told the American Society of Mammalogists.

Palaeochoerus was his name. In spite of the family conservatism, some of his grandchildren were freaks. One called *Tetraconodon,* found in the Pleistocene deposits in India, had a head two feet long and great conical teeth three inches high. A fierce-looking contemporary of *Palaeochoerus* had protruding front teeth, huge dagger-like tusks and grinders like those of a tapir. Still another contemporary, and so close a relative that they can hardly be told apart, migrated to North America and gave rise to the peccaries, the only pig-like animals of the New World.

Palaeochoerus himself stayed at home in India and became the ancestor of the true pigs of which many genera and species live in a wild state in the East Indies today. In the peccaries the canine teeth remain in a vertical position so that the bite is always up and down. In the pigs the canines project at an angle toward the outside of the mouth permitting sideways rotation of the jaw.

Science News Letter, June 2, 1934

ENTOMOLOGY

No Living Honeybee Has Ever Stung a Human Being

YOU have a herd of something over 2,000 honey bees at work for you, and your share of this year's honey crop should be a couple of ounces more than a pound.

This is based on figures given by James I. Hambleton of the U. S. Department of Agriculture. Mr. Hambleton estimated that the hive-bee population of the United States at the height of the honey season is about 280 billion, and that their honey product runs well over 150 million pounds. Dividing these by 125 million, the approximate population of the country, gives the results as stated.

But although bees are thus shown to be by far the most numerous of all animals producing food for man, they are still not domestic animals, Mr. Hambleton continued.

"There are no domesticated bees," he declared. "The bees that inhabit picturesque country-side apiaries are as wild as the bees found in a bee tree in the densest part of an isolated forest. Bees taken from a bee tree and placed in a modern hive are at once just as much at home as if they had always lived there, and vice versa. If a swarm of bees departs from a modern apiary and seeks its abode in some hollow tree, it is able to fare as well as any of its ancestors that knew no habitation other than hollow trees and caves."

The beekeeper does not get results from his buzzing colonies by taming or training the insects. He knows their habits, their natural reactions, and gives the bees opportunities to exercise them in ways that will work to his own profit.

Least of all do bees get to "know" their keeper, Mr. Hambleton stated.

"The modern beekeeper knows that the average life of the worker bee during the active season is only six weeks. The first two weeks the bee spends in the hive attending to household duties, and the other four it works in the fields. Since there is no occasion to open a hive more frequently than once a week, the beekeeper is well aware that the bees never come to know their master. One who understands the behavior of bees can work in another apiary just as safely and profitably as in his own. We can, therefore, dispel at once the prevalent idea that a beekeeper does not get stung because the bees know him. Every person who has occasion to work with bees will be stung more or less frequently, and it is doubtful whether there are any persons for whom the bees have an inherent antipathy and whom they delight to sting. The layman who is stung most is probably the one who is most nervous and afraid of the bees.

"The honeybee is the only one of the common bees that loses its sting in an effort of defense, and in losing its sting the honeybee also loses its life. The sting becomes so firmly anchored in the flesh that the bee cannot free itself, and in trying to tear itself away it is injured internally to such an extent that it dies a few minutes afterward. Thus it is probably safe to say that there is not a honeybee alive that has ever stung a human being. None of the honeybees now in existence has ever had any previous experience or practice in stinging; yet each instinctively knows how to use this very effective weapon of defense."

Mr. Hambleton's address was broadcast over the network of the Columbia Broadcasting System.

THE FIRST BOOK IN ANY LANGUAGE ABOUT THE STRATOSPHERE

EXPLORING THE UPPER ATMOSPHERE

The June Choice of the Scientific Book Club
By Dorothy M. Fisk. "It is not only the first popular book on the stratosphere, it is among the most interesting volumes that have appeared on problems of modern science. The author writes with fine humor and fine understanding of what laymen should know concerning the balloon voyages into the stratosphere and the latest studies of sound, heat and light."—*N. Y. Sun.*

OXFORD UNIVERSITY PRESS
114 Fifth Avenue New York

RADIO

SOIL EROSION: A NATIONAL MENACE

an address by

H. H. Bennett

Director, Soil Erosion Service, U. S. Department of Interior

Wednesday, June 6, at 3:30 p.m., Eastern Standard Time, over Stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

EVOLUTION

Shark-Like Pre-Fishes Called "Missing Link"

NEWLY determined structures in a group of extremely ancient pre-fishes justifies the creation of a new zoological group that stands midway between the very primitive jawless ancestors of the living lampreys and the true sharks. This contention was set forth by Prof. D. M. S. Watson of University College, London, at a meeting of the American Society of Ichthiologists and Herpetologists in New York.

Detailed studies on large numbers of fossils of the group, known as Acanthodians and previously considered as the most primitive of sharks, revealed, Prof. Watson pointed out, many important differences from true sharks. Chief among these is the development of true bone and tiny square scales very like those of living gar pikes. Studies on a well-preserved fossil brain case show that the arrangement of bones is unlike that of any known vertebrate.

Furthermore, the arrangement of the gill arches and the hyoid arch, which in sharks is reduced to a small spiracle and in fish becomes a part of the jaw apparatus, is unique in showing an intermediate step in the development of the lower jaw from what were originally bony supports for the gills.

Acanthodians flourished in the Silurian and Devonian seas from 360 to 340 million years ago. In general appearance they resembled sharks except that they possessed several more ventral fins than the conventional three pairs found on sharks and modern fish.

MEDICINE

Job's "Boils" Diagnosed As Rare Disease Pemphigus

THE "BOILS" which afflicted Job have now been diagnosed from a study of Job's case history as revealed in the Biblical account of his sufferings.

Job suffered from a very grave and puzzling disease known as pemphigus, stated Dr. David I. Macht of Baltimore in a report to the American Oriental Society. This disease is not common, but is found in every part of the world.

All the symptoms of Job's malady fit in very well with this disease, says Dr. Macht. Pemphigus starts suddenly without any relation to hygienic conditions, to venereal excesses or any other faults that could be attributed to the victim's carelessness. It is characterized by watery blisters on an inflammatory base which, on opening, become secondarily infected and lead to the formation of scabs, foul odor and pigmentation of the skin. Apparently Job aggravated his condition when he scraped his "boils" with a potsherd.

Pemphigus may also affect the mucous membranes lining the eyes, throat and mouth, Dr. Macht points out. The patients retain clearness of mind but suffer intense agonies. They are subject to sleeplessness, become gradually emaciated and weak and usually die. Poor Job suffered from all these symptoms, according to the Bible.

"The rate of mortality of this disease is almost as high as that of cancer," Dr. Macht stated. "Statistics indicate that it is more prevalent among Jews."

Dr. Macht and Dr. Isaac Pels, a skin specialist of Baltimore, have recently found that pemphigus is due to a poison circulating in the blood which can be demonstrated by special pharmacological methods.

"In the light of modern medicine, Job's disease could not possibly be identified with either leprosy or syphilis, because both these diseases are of a venereal character and obtained through sexual contact and the whole purpose of the book is to show that Job was an upright, moral man afflicted by a disease of unknown origin and not the result of his sinning," Dr. Macht stated.

"Smallpox and plague are not to be considered because of their contagious character and rapid course, which would preclude any long conversation between Job and his friends and would have led to a greater isolation of the victim in those days than at the present time. Ecthyma and eczema are not at all as severe in their manifestations as the sufferings described in the Book of Job."

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CHEMISTRY

Anti-Rickets Vitamin D Now Put in Evaporated Milk

A NEW method for increasing the vitamin D content of evaporated milk on a commercial scale has just been developed by K. G. Weckel and H. C. Jackson of the University of Wisconsin. The usual commercial methods of manufacturing evaporated milk are followed prior to and after irradiation.

The new process includes the use of a specially devised machine which permits the hot evaporated milk to flow in a thin film over an inner corrugated surface while it is being exposed to the ultraviolet rays produced by a carbon arc lamp. After irradiation, the milk is homogenized at the usual pressures, is cooled, canned and sterilized in the normal way.

Mr. Weckel and Mr. Jackson also found that cream can be irradiated without losing its natural and desirable flavor, which was formerly doubted. The irradiated cream is then recombined with the rest of the milk and handled in the customary commercial way. Both processes are now commercially possible and evaporated milk companies are producing such milk under license.

When this new irradiated evaporated milk is diluted with an equal part of water it has the same amount of rickets-preventing vitamin D per quart, which is 50 Steenbock units or about four to five times that of normal milk, as is required for the ordinary irradiated whole milk now on the market.

Science News Letter, June 2, 1934

Two British army doctors who studied air-conditioning in the tropics reported that costliness of such plants precludes their wide use, except in hospitals.

Before
THE DAWN

It's Fantasy:

A tale told for the sake of the romance of the tale; as such, fascinating to all lovers of romancing—boys and girls of high school age for instance.

It's Science:

For despite the calling into play of vivid imagination, there is scientific background for every detail—not mere idle dreaming.

It's Fantascience:

In short, something new: Written by a scientist for the pleasure of scientists and those who know that modern culture includes the scientific background.

Before
THE DAWN

By John Taine

(Eric Temple Bell, Professor of Mathematics, California Institute of Technology)

BY THE device of the "Langtry televisor" the narrator makes us see the end of the era of the great saurians, nature on a grand rampage, bloody battles, shifting seas, sinking continents, inundated deserts, spouting volcanoes, fearful earthquakes—all by the report of a literal eye-witness.

$2.00

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Publishers of Scientific Books and Periodicals
Baltimore, U.S.A.

First Glances at New Books

General Science

EXPLORING THE WORLD OF SCIENCE—C. H. Lake, H. P. Harley and L. E. Welton—*Silver, Burdett,* 692 p., $1.76. A general science text for high school use, in which special effort is made to impress the pupil with the human importance, the personal application, of scientific discovery and invention. Chapter heads are in the form of questions: "What is the atmosphere made of?" "How does heat serve man?" "How do plants grow and store up food?"

Science News Letter, June 2, 1934

Ethnology

THE DISTRIBUTION OF ABORIGINAL TRIBES AND LANGUAGES IN NORTHWESTERN MEXICO—Carl Sauer—*Univ. of California Press,* 94 p., $1. This volume, appearing as *Ibero-Americana* No. 5, was reviewed in the SCIENCE NEWS LETTER of March 24, 1934, and quoted as being free. The publication is priced at $1.

Science News Letter, June 2, 1934

Radiology

RADIUM PROTECTION FOR AMOUNTS UP TO 300 MILLIGRAMS—*Govt. Print. Off.,* 5 p., 5c. This U. S. Bureau of Standards Handbook (No. 18) was prepared by the Advisory Committee on X-ray and Radium and will be of great value to those working with the latter potent substance.

Science News Letter, June 2, 1934

Chemistry

EXPOSÉS DE CHIMIE GÉNÉRALE & MINÉRALE: II, L'INFLAMMATION ET LA COMBUSTION EXPLOSIVE EN MILIEU GAZEUX—M. Prettre, 52 p., 15 fr.; III, LES PHÉNOMÉNES PÉRIODIQUES DE LA CHIMIE—Suzanne Veil, 38 p., 15 fr., *Hermann et Cie. Paris.*

Science News Letter, June 2, 1934

Education

SECONDARY EDUCATION FOR NEGROES—*Ambrose Caliver—Govt. Print. Off.,* 121 p., 10c. Monograph No. 7 of the National Survey of Secondary Education.

Science News Letter, June 2, 1934

Education

THE PROGRAM OF STUDIES—A. K. Loomis, Edwin S. Lide, and B. Lamar Johnson—*Govt. Print. Off.,* 340 p., 15c. Monograph No. 19 of the National Survey of Secondary Education. "In nearly all these high schools the great majority of the graduates studied one or two sciences," the authors found. "Biology was studied by the largest proportion of pupils who took only one science; general science and biology were studied by the largest proportion of those who took two sciences . . . . . Among the academic subject groups, the largest percentage of work was taken in English and the smallest percentage of work in science. This may be due to the fact that in these high schools a large amount of English and a small amount of science were required for graduation."

Science News Letter, June 2, 1934

Education

NONATHLETIC EXTRACURRICULUM ACTIVITIES—William C. Reavis and George E. Van Dyke—*Govt. Print. Off.,* 174 p., 15c. Monograph No. 26 of the National Survey of Secondary Education.

Science News Letter, June 2, 1934

Education

LEGAL AND REGULATORY PROVISIONS AFFECTING SECONDARY EDUCATION—Ward W. Keesecker and Franklin C. Sewell—*Govt. Print. Off.,* 114 p., 10c. Monograph No. 9 of the National Survey of Secondary Education.

Science News Letter, June 2, 1934

Zoology

MILLIPEDS OF THE WEST INDIES AND GUIANA COLLECTED BY THE ALLISON V. ARMOUR EXPEDITION IN 1932—H. F. Loomis—*Smithsonian Institution,* 69 p., 4 pl., 35c.

Science News Letter, June 2, 1934

General Science

PAPERS OF THE MICHIGAN ACADEMY OF SCIENCE, ARTS AND LETTERS, 1933—Edited by Eugene S. McCartney and Peter Okkelberg—*Univ. of Michigan Press,* 662 p., 83 pl., cl. $4, pa. $2.25.

Science News Letter, June 2, 1934

Pathology

STUDIES ON HISTOMONIASIS, OR "BLACKHEAD" INFECTION, IN THE CHICKEN AND THE TURKEY—Ernest Edward Tyzzer—*Am. Acad. Arts and Sciences,* 71 p., 6 pl., $1.25. Listed incorrectly (SNL Mar. 31, 1934) at $1.75.

Science News Letter, June 2, 1934

Paleontology—Zoology

ATTENDING MARVELS: A PATAGONIAN JOURNAL—George Gaylord Simpson—*Macmillan,* xiii, 295 p., $3. A breezy, gossipy, yet meatily informative account of an expedition into a land whose chief resources seem to be fossils—some of them still alive and running about! The queerest land in the world, is Patagonia: it fascinated Charles Darwin, it fascinated the author of this book, and he will make it fascinate you.

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Meteorology

WORLD WEATHER RECORDS—Compiled by H. Helm Clayton—*Smithsonian Institution,* 616 p., pa., $1.50. A continuation of the remarkably comprehensive and useful mass of meteorological data published in an earlier number (Smithsonian Miscellaneous Collections, vol. 79). Material is presented under the English names of the stations, alphabetically arranged. It is no exaggeration to say that in collecting and arranging this material the author and the Smithsonian Institution are performing a world service.

Science News Letter, June 2, 1934

Entomology

RÉSULTATS SCIENTIFIQUES DU VOYAGE AUX INDIES ORIENTALES NÉERLANDAISES DE LL. AA. RR. LE PRINCE ET LA PRINCESSE LÉOPOLD DE BELGIQUE. Vol. IV, Fasc. 8: Heterometabola III, *and* Vol. IV, Fasc. 9: Coleoptera II—V. Van Straelen—*Musée Royal d'Histoire Naturelle de Belgique.*

Science News Letter, June 2, 1934

Phytopathology

VIRUS DISEASES OF PLANTS—John Grainger—*Oxford Univ. Press,* 104 p., $2. Mosaic, yellows, leaf-curl and similar diseases of plants are dreaded by agriculturist and horticulturist as smallpox and yellow fever, also virus diseases, are dreaded by physician and public health officer. The better our knowledge, the better our chances of escaping or conquering such plagues. For this reason this small but highly informative book will receive eager welcome. Its value is enhanced by a bibliography of 445 titles.

Science News Letter, June 2, 1934

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